

What is claimed:

1. An excavating tool that has a back and a front, including a plurality of rippers, a connecting structure connecting said rippers, said connecting structure attachable to an excavating linkage, with said plurality of rippers, including a first ripper protruding outwardly from said connecting structure, said rippers being staggered at varying distances from said first ripper towards the back of said tool and at varying distances from said first ripper, wherein all of said rippers do not align with each other either transversely or longitudinally of said connecting structure, said front being generally toward the ripping direction, including means defining a first axis of rotation of said tool relative to a dipperstick when said tool is attached to said dipperstick, wherein the tips of each of said rippers defines a curved cutting plane.
2. The tool of claim 1 wherein the tips of each of said rippers defines a curved cutting plane with a center about a second axis.
3. The tool of claim 2 wherein said first said second axis either lie on the same line or the second axis is either above or below the first axis.
4. The tool of claim 1 wherein the tips of each of said rippers defines a curved cutting plane with the curve being defined as parabolic.
5. The tool of claim 1 wherein each of said rippers includes a pair of relatively inclined surfaces defining a cutting edge, the upper one of said surfaces forming a cutting angle in the range of about 35 to 70 degrees from the tangent of the curve and the lower one of said surfaces being arranged to lie above a line extending from the cutting edge of said ripper to the cutting edge of any ripper more distant from said first ripper.

6. The tool of claim 1 wherein said rippers are spaced at regular intervals from said edge.
7. The tool of claim 1 including not less than three of said rippers, at least one of said rippers lying on each side of the longitudinal center line of said tool.
8. The tool of claim 1 wherein one of said rippers is positioned adjacent each side of said tool.
9. The tool of claim 1 wherein said ripper connecting structure is detachable from said excavator linkage connecting structure.
10. The tool of claim 1 wherein the distance from said first axis to said first ripper tip is at least 20 % less than the standard bucket for any given excavator size class.
11. For connection to an excavating tool of the type including at least three ripper shanks connected to said connecting structure, a plurality of rippers protruding downwardly from said bottom and facing towards a rotation direction thereof, said rippers being staggered at varying distances from said first ripper shank away from the rotation direction at varying distances from the center of said connecting structure, and being arranged so that no two of said rippers are aligned either transversely or longitudinally of said plate.
12. In an excavating tool including a connecting structure, and a plurality of rippers protruding downwardly from said connecting structure, and facing towards said rotation direction, said rippers being staggered at varying distances from said first ripper shank towards the back of said tool and at varying distances from the center of said tool, said

rippers defines a cutting edge and said rippers are positioned such that said ripper cutting edges lie in an arc.

13. The tool of claim 12 including means defining the axis of rotation of said tool relative to said dipperstick when said tool is attached to said dipperstick, and wherein said arc is an arc of constant radius having its center at a point either above or below said axis of rotation.

14. The tool of claim 12 wherein said arc is of constant radius.

15. The tool of claim 12 wherein said arc is elliptical.

16. The tool of claim 12 wherein the distance from said arc to means defining the axis of rotation of said tool relative to a dipperstick when said tool is attached to said dipperstick is greater adjacent the front of said tool than towards the rear of said tool.

17. The tool of claim 12 wherein the distance from said arc to means defining the axis of rotation of said tool relative to a dipperstick when said tool is attached to said dipperstick is less adjacent the front of said tool than towards the rear of said tool.

18. The device of claim 12 wherein the width and placement of said rippers is such that when viewed longitudinally of said tool they extend transversely substantially continuously the width of said tool.

19. The tool of claim 12 wherein said arc has its center at a point above or below said axis of rotation.

20. The device of claim 19 wherein the width and placement of said rippers is such that when viewed longitudinally of said plate they extend substantially continuously the width of said plate.

21. In an excavating tool including:

- (a) means defining the axis of rotation of said tool relative to a boom or dipperstick to which said tool may be attached;
- (b) a plurality of rippers protruding downwardly from said bottom and facing generally towards the front of said tool; and
- (c) said rippers being positioned at varying distances from said front ripper shank such that when said tool is rotated about said axis of rotation thereof said rippers will sequentially engage a substrate to be fractured, each of said rippers being arranged to engage the ground subsequent to any ripper more closely adjacent said front ripper shank and prior to any ripper farther from said front ripper shank, and said rippers being positioned at varying distances from the sides of said tool such that when said tool is rotated about said axis of rotation thereof rippers farther from said front ripper shank will fracture material of said substrate into cuts previously made by rippers nearer to said front ripper shank.

22. The device of claim 21 wherein each of said rippers defines a cutting edge, and said rippers are positioned such that said ripper cutting edges thereof lie in an arc.